

REMARKS

Reconsideration of this application is respectfully requested.

The allowance of claims 27 through 38 is appreciated.

Claim 39 is directed to a vehicle steering column having an axially extending input shaft which is connected to a vehicle steering wheel. A housing at least partially encircles the input shaft. The housing includes first and second housing parts which are assembled together to form first and second axially spaced apart chambers which extend around the input shaft and have ribbed bottom surfaces.

A first bearing assembly is set forth in claim 39 as having an inner race connected with the input shaft. The first bearing assembly has an outer race seated in the first chamber in engagement with the first and second housing parts. The first bearing assembly includes a plurality of rotatable elements which are disposed between the inner and outer races of the first bearing assembly.

In addition, claim 39 sets forth a second bearing assembly as having an inner race connected with the input shaft at a location spaced from the first bearing assembly. The second bearing assembly has an outer race which is seated in the second chamber in engagement with the first and second housing parts. The second bearing assembly includes a plurality of bearing elements which are disposed between the inner and outer races of the second bearing assembly.

A first gasket is set forth in claim 39 as being disposed in the first chamber between the outer race of the first bearing assembly and the ribbed bottom surface of the first chamber. The first gasket is disposed in engagement with the first and second housing parts. A second gasket is disposed in the second chamber between the outer race of the second bearing assembly and the ribbed bottom surface of the second chamber. The second gasket is disposed in engagement with the first and second housing parts.

Claim 39 defines over the prior art, and particularly the parts to Venable, et al. (4,981,049) and Pfenninger, et al. (2,674,505), by setting forth a housing which at least partially encircles the input shaft and has first and second housing parts which are assembled together to form first and second axially spaced chambers which extend around the input shaft and have ribbed bottom surfaces. The patents to Venable, et al. and Pfenninger, et al. do not disclose a housing having first and second axially spaced apart chambers which extend around an input shaft and have ribbed bottom surfaces. In the patent to Pfenninger, et al. the outer ring-like member 17 is not formed by first and second parts which are assembled together. In addition, the outer ring-like member 17 of Pfenninger, et al. does not define first and second axially spaced apart chambers.

Claim 39 further defines over the patents to Pfenninger, et al. and Venable, et al. by setting forth the relationship between the first and second bearing assemblies and the first

and second chambers. Specifically, the first bearing assembly has an outer race which is seated in the first chamber in an engagement with the first and second housing parts. In addition, the second bearing assembly is set forth as having an outer race seated in the second chamber in engagement with the first and second housing parts. In the patent to Pfenninger, et al., the outer race 11 of the bearing is not disposed in engagement with first and second housing parts. In addition, the patent to Pfenninger, et al. does not even disclose a second bearing assembly. There is nothing in the patent Pfenninger which suggests having the outer race of the second bearing assembly seated in a second chamber in engagement with the first and second housing parts.

Claim 39 further defines over the patents to Venable, et al. and Pfenninger, et al. by setting forth the relationship between the first and second gaskets and the first and second housing parts. Specifically, the first gasket is set forth in claim 39 as being disposed in a first chamber in engagement with the first and second housing parts. The layer of elastic material 22 of Pfenninger, et al. is not disposed in a chamber in engagement with first and second housing parts in the manner set forth in claim 39.

Claims 40 through 45 depend from claim 39 and define over the prior art for substantially the same reasons as does claim 39 and by virtue of the structure and function set forth in these claims taken in combination with the structure and function of claim 39. Specifically, claim 40 sets forth the

first gasket as having annular ribs which are formed by engagement with the ribbed bottom surface of the first chamber. The second gasket has annular ribs which are formed by engagement with the ribbed bottom surface of the second chamber.

Claim 41 depends from claim 39 and sets forth the first gasket as having a plurality of annular ribs with parallel circular crests. The crest of each rib on the first gasket is spaced from the crest of an adjacent rib on the first gasket. The second gasket has a plurality of annular ribs with parallel circular crest. The crest of each rib on the second gasket is spaced from the crest of an adjacent rib on the second gasket. The patent to Pfenninger, et al. discloses an inner ring member 18 having a single spiral shaped crest or rib which extends through out the axial extent of the ring 18.

Claim 42 depends from claim 39 and sets forth the first and second housing parts as at least partially defining a cylindrical surface which extends from an axial end portion of the first chamber to an axial end portion of the second chamber. The first and second gaskets are spaced from the cylindrical surface. The patent to Pfenninger, et al. does not disclose or even remotely suggest having a cylindrical surface extend from an axial end portion of a first chamber to an axial end portion of a second chamber in the manner set forth in claim 42.

Claim 43 sets forth the first and second housing parts as having a first annular radially extending surface which at

least partially defines a first end of the first chamber. The first and second housing parts have a second annular radially extending surface which at least partially defines a second end of the first chamber. The outer race of the first bearing assembly has a first annular end surface which is disposed in engagement with the first annular radially extending surface on the first and second housing parts. The outer race of the first bearing assembly has a second annular end surface which is disposed in engagement with the second radially extending surface on the first and second housing parts.

In addition, the first and second housing parts are set forth in claim 43 as having a third annular radially extending surface which at least partially defines a first end of the second chamber. The first and second housing parts also have a fourth annular radially extending surface which at least partially defines a second end of the second chamber. The outer race of the second bearing assembly has a first annular end surface which is disposed in engagement with the third annular radially extending surface on the first and second housing parts. The outer race of the second bearing assembly has a second annular end surface which is disposed in engagement with the fourth radially extending surface on the first and second housing parts.

Claim 44 depends from claim 43 and sets forth the first gasket as having a first annular end surface which is disposed in engagement with the first annular radially extending surface on the first and second housing parts. The first

gasket has a second annular end surface which is disposed in engagement with the second radially extending surface on the first and second housing parts.

In addition, claim 44 sets forth the second gasket as having a first annular end surface which is disposed in engagement with the third annular radially extending surface on the first and second housing parts. The second gasket has a second end surface which is disposed in engagement with the fourth radially extending surface on the first and second housing parts.

Claim 45 depends from claim 44 and sets forth the first gasket as having a cylindrical side surface which extends between the first and second annular radially extending surfaces on the first and second housing parts and is disposed in engagement with a cylindrical side surface on the outer race of the first bearing assembly. The second gasket has a cylindrical side surface which extends between the third and fourth annular radially extending surfaces on the first and second housing parts and is disposed in engagement with a cylindrical side surface on said outer race of said second bearing assembly.

Independent claim 46 is directed to a vehicle steering column which includes an input shaft for connecting to a vehicle steering wheel. A housing extends around the input shaft. The housing includes an annular chamber. The annular chamber has a bottom with a plurality of annular ribs which extend around the input shaft and have parallel circular

crests. The crest on each rib is spaced from the crest on an adjacent rib.

A bearing assembly is set forth in claim 46 as having an inner race connected with the input shaft. An outer race of the bearing assembly is seated in the chamber in the housing. The outer race of the bearing assembly has a first annular end which is disposed in engagement with a first radially extending surface on the housing. The outer race of the bearing assembly has a second annular end which is disposed in engagement with a second radially extending surface on the housing to enable the outer race of the bearing assembly to block an entrance to the chamber.

In addition, claim 46 sets forth a gasket which is entirely disposed in the chamber between the outer race of the bearing assembly and the bottom of the chamber. The gasket extends into spaces between the annular ribs to retain the gasket against axial movement relative to the housing.

Claim 46 defines over the prior art and particularly the patents to Venable, et al. and Pfenninger, et al. by setting forth the annular chamber which has a plurality of annular ribs having parallel circular crests. The crests on each rib is spaced from the crest of an adjacent rib. In the patent to Pfenninger, et al. the outer ring-like member 17 and the inner ring-like member 18 are both provided with a single spiral shaped rib. The spiral shaped rib 23 on the outer ring-like member 17 of Pfenninger, et al. does not have parallel circular crests. The single rib 23 on the ring-like member 17

of Pfenninger, et al. does not have parallel crests which are spaced from the crest of an adjacent rib in the manner set forth in claim 46.

Claim 46 further defines over the patents to Venable, et al. and Pfenninger, et al. by setting forth the outer race of the bearing assembly as having a first annular end which is disposed in engagement with a first radially extending surface on the housing. The outer race of the bearing assembly has a second annular end which is disposed in engagement with a second radially extending surface on the housing. Such a construction is not even remotely suggested by the patents to Venable, et al. and/or Pfenninger, et al.

Claims 47 through 49 depend from claim 46 and define over the prior art for substantially the same reasons as does claim 46 and by virtue of the structure and function set forth in these claims taken in combination with the structure and function of claim 46. Specifically, claim 47 sets forth the housing as including a second annular chamber. A second bearing assembly has an outer race seated in the second chamber in the housing. The outer race of the second bearing assembly has a first annular end which is disposed in engagement with a third radially extending surface on the housing and a fourth annular end which is disposed in engagement with a fourth radially extending surface on the housing. A second gasket is entirely disposed in the second chamber.

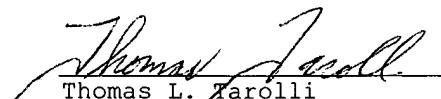
Claim 48 depends from claim 46 and sets forth the gasket as having annular ribs which are formed by engagement with annular ribs on the bottom of the chamber.

Claim 49 depends from claim 46 and sets forth the housing as including first and second housing parts which are assembled together to form the chamber.

In view of the foregoing remarks, it is believed that the claims in this application clearly and patentably define over the prior art. Therefore, it is respectfully requested that the claims be allowed and this application passed to issue.

If for any reason the Examiner believes that a telephone conference would expedite the prosecution of this application, it is respectfully requested that the Examiner call applicant's attorneys in Cleveland, Ohio at 621-2234, area code 216. Please charge any deficiency in the fees for this application to our Deposit Account No. 20-0090.

Respectfully submitted,

  
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